

What is claimed is:

1. A near-hermetic power chip-on-board (P-COB) device comprising:
a substrate;
a semiconductor device disposed on said substrate, said semiconductor device
5 including a silicon nitride passivation upper layer; and
a sealant disposed directly on said silicon nitride layer.
2. The P-COB device according to claim 1, wherein said substrate is a
polyimide PWB.
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3. The P-COB device according to claim 1, wherein said substrate is a
direct bond copper substrate.
4. The P-COB device according to claim 1, further comprising:
15 a die attachment which attaches said semiconductor device to said substrate.
5. The P-COB device according to claim 1, wherein said sealant is
formed of silicon carbide.
- 20 6. The P-COB device according to claim 5, wherein said silicon carbide
is deposited at a thickness of approximately 4000 Angstroms.

7. The P-COB device according to claim 1, further comprising:
an aluminum bond pad and aluminum wires disposed on said semiconductor
device.

5 8. The P-COB device according to claim 7, further comprising:
a conformal coating disposed on said sealant, said aluminum bond pad and
said aluminum wires.

9. The P-COB device according to claim 8, further comprising:
10 a protective cover disposed on said conformal coating.

10. The P-COB device according to claim 1, wherein said semiconductor
device is a power MOSFET.

15 11. The P-COB device according to claim 8, wherein said conformal
coating is less than 2 mils in thickness.

12. A near-hermetic device comprising:
a substrate;
20 an electronics package disposed on said substrate;
a sealant disposed directly on a surface of said electronics package; and
a conformal coating disposed on said sealant.

13. The near-hermetic device according to claim 12, further comprising:
a protective cover disposed on said conformally-coated electronics package.

5 14. A power chip-on-board (P-COB) device comprising:
a substrate;
a semiconductor device disposed on said substrate, said semiconductor device
including a silicon nitride passivation upper layer;
a silicon carbide layer disposed directly on said silicon nitride layer; and
10 a conformal coating disposed on said silicon carbide layer.

15 15. A method of manufacturing a near-hermetic power-chip-on-board (P-COB) device, comprising:
providing a substrate;
attaching a semiconductor device to said substrate; and
directly depositing a sealant over an upper passivation layer of silicon nitride
of said semiconductor device.

20 16. The method according to claim 14, further comprising:
disposing an aluminum bond pad and aluminum wires on said semiconductor
device.

17. The method according to claim 16, further comprising:
disposing a conformal coating on said sealant.

18. The method according to claim 17, further comprising:
5 disposing a protective cover on said conformal coating.

19. The method according to claim 15, wherein said semiconductor device
is a power MOSFET.

10 20. The method claim 15, wherein said substrate is a polyimide PWB.

21. The method according to claim 15, wherein said substrate is a direct
bond copper substrate.

15 22. The method according to claim 15, further comprising:
attaching said semiconductor device to said substrate using a die attachment.

23. The method according to claim 15, wherein said sealant is a silicon
carbide.

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24. The method according to claim 23, wherein said silicon carbide is deposited to a thickness of approximately 4000 Angstroms.